U.S.S. ENTERPRISE CVA-N-65

ALL HANDS

DAMAGE CONTROL BOOKLET

FLEET TRAINING GROUP
US NAVAL STATION
GUANTANAMO BAY, CUBA
AUGUST 1965

U.S.S. ENTERPRISE (CVA(N)-65)
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From: Commanding Officer
To: All Hands

Subj: Refresher Training in Damage Control

1. Damage Control is a job which requires the attention of every man on ENTERPRISE, starting with myself and including every Airman, Seaman and Fireman on the ship. The importance and size of this job is indicated in the fact that when the ship is ready for battle the primary job of approximately one third of the ship's company is damage control, and all hands participate whenever damage occurs in their areas.

2. The first requirement for good damage control is to make every man of ENTERPRISE aware that damage control is part of his duty. The second requirement is to teach him what he must do to carry out that duty properly. This booklet is intended to meet both requirements.

3. Read this booklet all the way through. Then go back and give additional attention to the sections with which you should be most familiar. For example, every man should remember in detail what to do when a fire is discovered. However, the section on compartment check off lists is intended to be used as a reference while you are checking your own compartments for battle preparedness. Be sure to study several times the questions and answers in the last section. Part of our final grade will be determined by the answers which observers receive to these questions.

4. Damage control drills will be repeated many times. Use every drill to improve your knowledge and performance. Teamwork is developed only through practice.

5. The final deciding factors will be the interest and enthusiasm with which you carry out this job. ENTERPRISE will turn in an outstanding performance if you do your best.

J. L. Holloway III
J. L. HOLLOWAY, III

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A. CONDUCT OF DAMAGE CONTROL TRAINING

1. ENTERPRISE will conduct approximately four weeks of intensive training at Guantanamo Bay. During this training, the Fleet Training Group (FTG) observers/instructors will assist us in improving our readiness and correcting our errors. These instructors have observed many ships in training. They know which methods work and have picked up many pointers. In their present duty they are able to concentrate on damage control training and procedures without distraction. Talk things over with them. Their advice is invaluable.

2. Damage Control is an all hands responsibility. For this ship to enter battle and emerge successfully, every man must know the proper action to take when the ship is injured and he must be prepared to take that action promptly. In addition, the ship must have the best possible preparation to sustain damage with minimum adverse effects. This means that every single man must take personal responsibility for ensuring that damage control equipment is kept on station throughout the ship and that hatches and fittings are routinely kept closed, as required. To pass this training period successfully, all hands must be just as conscious of damage control as they would be in actual battle.

3. An Arrival Inspection will be conducted immediately upon arrival at Guantanamo Bay. Through this inspection we will identify any basic problems which must be corrected to allow us to complete training successfully.

4. During the four weeks of training, the ship will go to General Quarters for damage control drills at least once every day underway. Normally, on each Monday, Wednesday and Friday, these drills will be observed by ourselves and will be conducted in such a manner as not to interfere with air operations. On each Tuesday and Thursday there normally will be FTG Damage Control Observers to assist us, and drills which would interfere with air operations may be conducted, such as nuclear warfare defense drills.

5. Upon completion of training, an Operational Readiness Inspection (ORI) will be held to test how much we have learned. This will be our "final exam" before leaving Guantanamo Bay.

B. GENERAL INSTRUCTION

1. Know and understand your duties for each drill. Consult your Station Leading Petty Officer if you are in doubt. Never hesitate to admit you do not know something through asking questions. The only wrong action is to continue in ignorance. Damage control is not a difficult job, and there are only a limited number of different drills which will be conducted. There are no mysteries: proper action is well advertised for every drill. Be sure you get the word. Ask questions and be alert. Anything is difficult if you do not understand it; it is easy after you learn.

2. For General Quarters, walk quickly to your station, but do not run. Follow prescribed traffic routes: forward or up to starboard, aft or down to port. Man your station and equipment; then don battle dress. Know more than one route to your battle station. When word is passed to stay clear of a certain area, as for a nuclear weapons accident, proceed to your battle station by a different route.

a. Always have collars and sleeves buttoned and trousers tucked into socks at General Quarters to protect against flash burns. Repair parties wear helmets. Topside personnel wear life jackets and helmets (except flight deck personnel).

b. Eliminate missile hazards by securing all loose gear. Loose gear can be thrown violently across the compartment by the shock wave from an explosion. It is dangerous to personnel.

c. Do not "shoot the breeze" on the telephones or man-to-man. Check out your station thoroughly, then stay alert for further action.

d. Eliminate fire hazards.

e. Close the hatches in main passageways only when the word is announced on the 1MC at approximately four minutes after GQ sounds. To do this earlier would prevent men from getting to their stations.

C. FIRE DRILLS

1. Many fire drills will be conducted both in port and underway. YOU may be the first one on the scene when a drill is started. Know what to do - it is easy! Drills may be initiated with the use of smoke grenades, or they may be initiated by verbal instructions to the first man on the scene. Your action is the same either way.

a. Report the fire to the bridge or quarterdeck. Do this by sending another man if available; if not, do it yourself. The proper procedure either underway or in-port is to dial 211 (remember that number) and report:

(1) Name and number of compartment.
(2) Frame where fire is located.
(3) Deck where fire is located.
(4) Side of ship where fire is located.
(5) Name of person reporting.
(6) Phone number from which calling.

Example: "Class A fire in boatswain's locker, compartment 1-22-1-A, Main Deck, frame 25, Starboard Side. DOAKS, Seaman Apprentice reporting on phone 380."

b. Fight the fire with means available. Use a fire hose if available. Use a CO2 on electrical fires. Continue fighting it as long as you are able to do so, or until the observer tells you the fire is beyond control. At that time, move into the next compartment and set Zebra around the fire until assistance arrives. The Repair Parties will be on station to help you quickly.

c. Repair parties will fight the fire when they arrive using standard procedures and all available equipment.

d. The observer will probably tell you the color of the smoke which is being simulated. This informs you of the class of fire - recognize it so you can report the fire correctly:

White Smoke - Class Alpha fire.
Black Smoke - Class Bravo fire.
Blue Smoke - Class Charlie fire.

D. PERSONNEL CASUALTIES

1. Initial First Aid Treatment of Injuries.

a. Check for breathing first. If not breathing, give mouth to mouth artificial resusitation immediately.

b. Next look for hemorrhage (bleeding). If possible, treat it simultaneously with artificial resusitation. Otherwise, treat hemorrhage as soon as breathing is restored.

(1) Use pressure with a bandage over the bleeding to control it. Tourniquets should be used only when other methods have failed, or in severe cases such as amputation.

c. Treat for shock.

(1) Lay patient flat with his head lowered. Use any material available to raise his feet.

(2) Keep patient warm. Cover with a blanket if available.

(3) Relieve pain. Morphine syrettes will be in the first aid boxes when the ship is in an actual combat area. Use only if needed. (Never in case of head injuries)

d. Bandage the wound.

(1) Make chest wounds air tight by sealing.

(2) Cover wounds of the abdomen with moistened bandage if intestines are exposed. Keep the bandage moist until the patient is seen by medical department personnel.

(3) Cover other wounds with a dressing from the nearest first aid box. Dressings should be applied with pressure if bleeding must be controlled.

e. Apply Splints to Fractures.

(1) Apply wire ladder or basswood splints. If these are not available, use a swab handle, rifle, or anyother rigid material to keep the broken bones from moving.

f. Apply burn dressing, if appropriate.

g. Evacuate seriously wounded personnel to the nearest battle dressing station. Others return to their battle stations.

2. Nuclear Attack Self Aid.

a. Topside exposed personnel protect self by getting behind available structures. Shield eyes from blasts. Take the position prescribed on page G-7 of this booklet.

b. Contaminated personnel will be directed to proceed to a decontamination area (Decon Station) for shower and treatment. Decon stations are located as follows:

(1) 2-32-2-L
(2) 2-141-2-L
(3) 2-162-1-L
(4) 2-235-4-L

c. Do not eat, drink or smoke until the Commanding Officer announces it is safe to do so. Contaminated materials, including fallout, probably will not affect you seriously unless they get inside your body.

d. Move inside the ship quickly if the Commanding Officer orders all topside stations cleared.

3. Biological Attack/Chemical Attack.

a. The procedures for these two drills closely parallel the procedures used for nuclear defense. Decontamination procedures are the same. Personnel would put on gas masks when ordered, and you should know how to use one. However, masks will be used during drills only by monitoring,detection, sampling and decontamination teams.

b. You should always have your Atomic, Biological and Chemical Warfare Pocket Reference Card (NavPers 2778) with you. Know what information is on it; when asked questions by observers, you may refer to this card while answering.

4. Casualty Handling.

a. During battle, personnel casualties are always taken to the nearest battle dressing station. Repair parties will help transport them. From there, they will be sent on to Sick Bay if necessary. Corpsmen will not come to the casualties during battle; they do not have time. Take all casualties to the Corpsmen.

2. DAMAGE CONTROL CLASSIFICATIONS & MATERIAL CONDITIONS

1. There are three material conditions which may be set on the ship---' ZEBRA", "YOKE", and "X-RAY". Material conditions refer to the degree of damage which the ship is prepared to sustain and survive. In condition "X-RAY", no damage is expected and many watertight fittings are open. In condition "ZEBRA", the maximum degree of subdivision is maintained. Each compartment is completely isolated from every other compartment, except for vital systems, such as steam lines, firemains, and electric ciruits. Condition "YOKE" is the normal steaming condition in which a large number of watertight fittings are closed. It is the responsibility of all hands to know and understand the meaning of each material condition and the damage control markings used in setting these conditions.

2. The four basic damage control classifications used on damage control fittings such as doors, hatches, valves, etc., are X, Y, Z and W as follows:

CLASSIFICATION	MEANING:
X	To be closed at all times when not actually in use.
X (Black Circle)	To be closed at all times when not in use. May be opened without consulting DC Central for entrance to battle stations, or for ammunition passing at GQ.
Y	To be closed when condition YOKE is set.
Y (Black Circle)	To be closed when condition YOKE is set. May be opened without consulting DC Central for access to battle stations, for ammunition passing at GQ.
Z	To be closed at General Quarters.
Z (Black "D")	To be closed at Darken Ship and General Quarters.
Z (Red Circle)	To be closed at GQ. May be opened during "Modified condition ZEBRA" for access or ventilation.
W	Must be opened or running at all times except to isolate damage.
W (Black Circle)	Must be closed under nuclear, biological, or chemical attack to prevent contamination of interior of ship by harmful material.

MATERIAL CONDITION SETTING

MATERIAL CONDITION IN EFFECT	FITTING CLASSIFICATION X	Y	Z	W
XRAY	CLOSED	OPENED	OPENED	OPENED
YOKE	CLOSED	CLOSED	OPENED	OPENED
ZEBRA	CLOSED	CLOSED	CLOSED	OPENED

3. Setting and Maintenance of Material Conditions.

a. The following procedures for the setting of material conditions are outlined for the information of all hands:

(1) Condition YOKE - When condition YOKE is set, division Damage Control Petty Officers and duty section Damage Control Petty Officers will check all X and Y fittings and report to the Engineering Log Room when all such fittings in that division's spaces are secured. It must be remembered that all divisional spaces must be checked, not just living spaces. Condition YOKE is to be set and checked prior to getting underway and in port at 1645, and reports are made as above. Condition YOKE must be checked with the aid of the compartment check-off lists in each space. Condition YOKE remains in effect upon breaking condition ZEBRA after General Quarters.

(2) Condition ZEBRA - Is the ship's condition of maximum readiness for battle. IT IS VITAL THAT NOT ONLY EVERY Z FITTING BUT EVERY X AND Y FITTING BE CLOSED. When this is the case, every compartment is isolated and progressive spread of fire or flooding can be prevented. Deck drains are closed, flushing and fresh water are secured at root valves, and hull openings which are not required for the operation of the ship are closed. Condition ZEBRA will be set thoroughly and completely without further orders when General Quarters is sounded. Personnel manning battle stations should set Condition ZEBRA in the immediate vicinity of their station. Repair party personnel will set condition ZEBRA in all unmanned spaces and also ensure the completeness of setting throughout the ship.

b. In many of the material conditions, ZEBRA, YOKE or XRAY, it is of vital importance that the specified fittings are closed. In the event of damage, flooding can be controlled only when definite and known watertight boundaries are maintained. All hands have definite responsibilities with regard to maintaining the watertight integrity of the ship, and to fulfill this responsibility, they must know and understand the rules established for the maintenance of the material conditions.

c. NO ONE will break a material condition by opening a valve, door, or other damage control fitting which is required to be closed for the material condition in force, unless proper authority is obtained from Damage Control Assistant.

d. To obtain authority to open a fitting, give DC Central (phone 888) the following information:

(1) Number, type and classification of fittings will be open.

(2) Reason for opening, and time of action.

(3) Length of time it is expected that the fittings will be open.

(4) Name, rate and division of the person making the request.

(5) After the fitting has been closed, this fact must be reported to DC Central.

An exception of this rule is: No permission is required to open "Circle" XRAY or YOKE fittings for access to battle stations or ammunition passing at GQ if the fitting is immediately closed when not in use.

IN CONDITION ZEBRA, NOT ONLY EVERY Z FITTING BUT EVERY Y AND X FITTING MUST BE CLOSED. ONE OPEN VALVE OR ONE LOOSE DOG IS SUFFICIENT TO MAKE THE WATERTIGHT INTEGRITY OF A COMPARTMENT UNSATISFACTORY.

4. Grading Material Conditions.

a. Grading the setting and maintaining of material conditions of closure. Grades will be assigned by the senior damage control observer or instructor in accordance with the deficiencies noted. Deficiencies fall in two categories, major and minor.

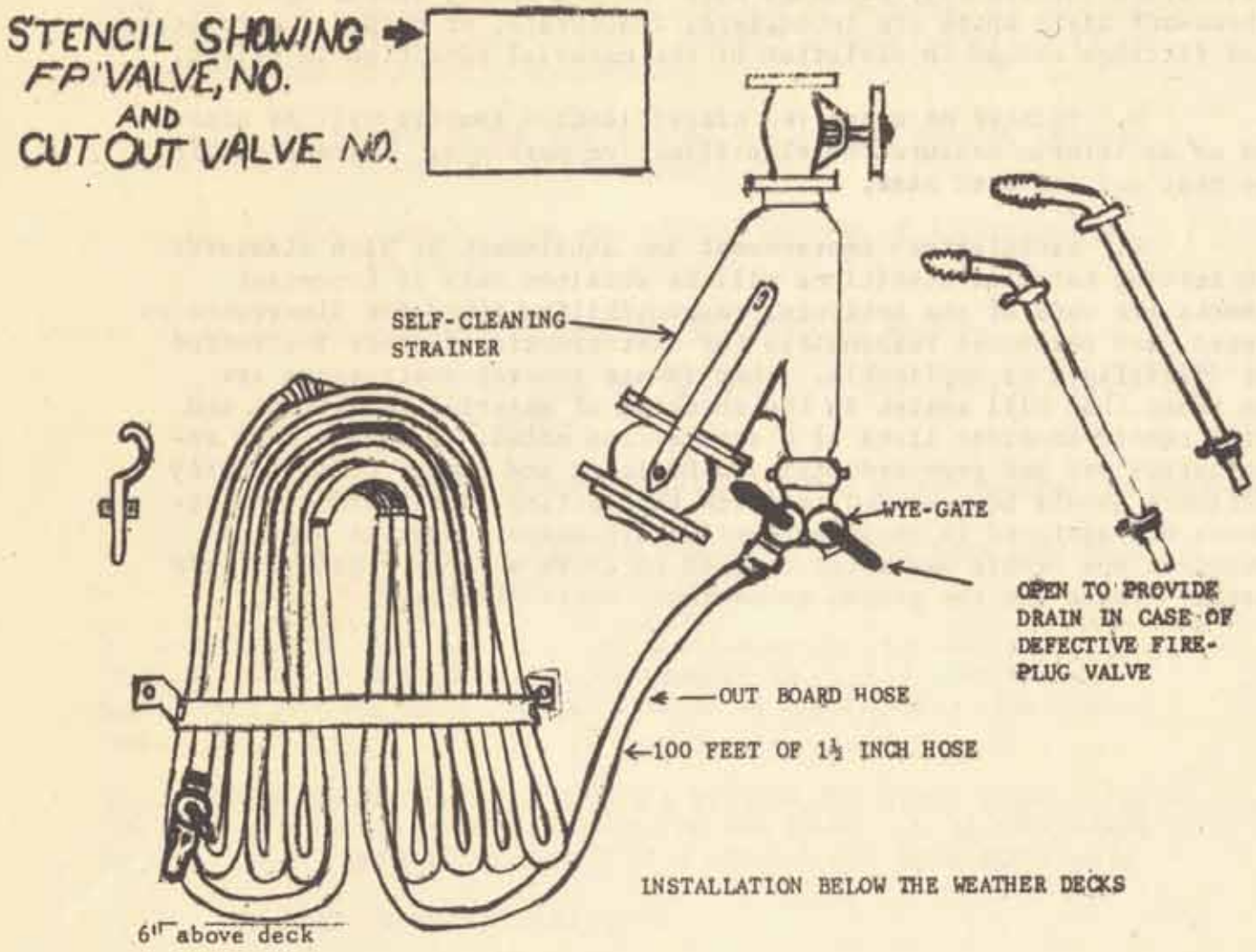
(1) Major deficiencies are: holes in WT boundaries, fittings left open in violation of material condition and not correctly entered in the closure log; fittings with two or more loose dogs; compartment check-off list not posted; and missing or inoperative fittings.

(2) Minor deficiencies are: fittings not classified or classified incorrectly; fittings with one dog loose; compartment check-off lists which are incomplete, inaccurate, or posted incorrectly; and fittings closed in violation of the material condition in effect.

b. Painted or stenciled classification symbols will be accepted as an interim measure for classification markings. Letters should be neat and standard size.

c. Satisfactory improvement and attainment of high standards in setting material conditions will be obtained only if frequesnt checks are made of the settings, responsibility fixed for discrepancies noted, and personnel responsible for discrepancies further instructed or disciplined as applicable. When damage control instructors are on board they will assist in the checking of material conditions and will submit complete lists of discrepancies noted. The days that instructors are not provided Division Officers and damage control petty officers should be required to check the setting in selected compartments not assigned to their respective divisions. When at General Quarters one repair party can be used to check another repair party's area. Always use the posted compartment check-off lists.

F. PROPER RIGGING OF FIRE PLUG STATION



FIRE PLUG STATION INSTALLATION

Installations need not be arranged exactly as in the diagram, but the following points apply to all arrangements:

a. Only one hose consisting of two lengths joined together with nozzle attached should be connected to the wye-gate. The other gate should be left opened to provide drainage in case of a defective fire plug.

b. The number of the plug should be plainly visible on the stencilled bulkhead label and the valve wheel label plate.

c. Nozzles should be kept in good repair. The high velocity spud in the end of the nozzle should be easily removable, cleaned with a wire brush (bright work polish clogs the holes), and chained to the nozzle. Nozzles should be attached to the hose.

d. Applicators should fit easily into the nozzle. Nozzle end should be free of paint and not bent or deformed.

e. Applicator fog heads should be free of bright work polish or paint, and should have strainers under them.

f. Hose should be in good repair. It should be refaked at least once a month and should be put back so that the folds do not come in the same places as before. Hose should not be faked with water in it.

All of the above applies to 2½ inch fire plugs without wye-gates and to 1½ inch plugs except a . Such plugs can only supply one hose, and this hose should be connected. The strainer should be left opened to provide drainage in case of defective fire plug.

Note: A second hose consisting of two lengths joined together with nozzle attached but not attached to the WYE-GATE shall also be present at each hose station.

G. NUCLEAR WARFARE

1. Nuclear Warfare Defense involves action by virtually every man on board the ship. Considerable detail has been included in this section. Read it carefully until you understand all action involved.

a. General:

(1) The ship's NBC Defense training will be tested by a simulated underwater burst of a low yield nuclear device. Fleet Training Group Damage Control Observers will impose a simulated heavy radioactive contamination on all weather surfaces and, after primary gross decontamination, impose several areas of residual contamination which would constitute serious personnel hazards. It is recognized that the Nuclear hit, as imposed, represents a highly hypothetical situation. However, this is necessary in order to exercise the maximum number of elements of the Nuclear Warfare Defense Organization. The exercise can be conducted as an intergral part of a battle problem at sea, or as a separate exercise in port with minor modifications.

b. The Nuclear Warfare Defense Exercise at sea is based upon the following assumptions.

(1) The underwater burst is caused by a tactical nuclear weapon of relatively low yield - 20 to 30 kilotons.

(2) The underwater burst occurs upwind at a range of from 3000 to 5000 yards.

(3) The underwater burst occurs as a complete surprise (Delivery of weapon is undetected).

(4) The ship is sufficiently distant from the underwater burst to prevent total disablement.

(5) The ship is sufficiently close to the underwater burst to become engulfed in the base surge and/or heavy fallout and become highly contaminated.

(6) The ship will clear the base surge and/or heavy fallout before the maximum peak intensity is reached.

(7) The tactical situation is such that the ship can break off from action when the nuclear attack is announced and apply maximum radiological defense measures as follows:

(a) Action.

1. Endeavor to present a STERN-ON or BOW-ON aspect to the burst until the immediate damaging effects are over. Then alter course away from the burst at maximum available speed until clear of the immediate area. Ref. ATP-1(A) Art. 2313 and NWP-32A.

2. Sound Chemical Alarm, when shock wave has passed.
3. Close circle WILLIAM (W) fittings.
4. Evacuate all exposed topside personnel.
5. Accomplish primary gross decontamination.

(b) The ship will be under conventional air attack, other than nuclear, any time between +15 and +30 which will require remanning of all vital open air defense stations.

c. Warning:

(1) There will be no warning whatever on daily rides.

(2) On the ORI, from one to three hours prior to the beginning of the battle problem, the ship will receive a message from the OTC stating that a Nuclear attack is possible during the battle problem. NO FURTHER WARNING WILL BE GIVEN. It will be wrong to assume that the Nuclear Attack will be the first hit of the battle problem and that it will be delivered by an aircraft - it may occur at any time after the battle problem has commenced.

d. Preliminary Action.

(1) On ORI Only:

(a) When warning is received that a Nuclear attack is possible, pass over 1MC "Nuclear attach probable; continue defense of the Ship." Continuing the defense of the ship is a command decision. However, in order not to interfere with other exercises that may be in progress, this decision will be made.

(b) When the word is passed, "Nuclear attack probable, continue defense of the ship":

1. All departments should take action to eliminate fire and missile hazards and to reduce the amount of exposed porous material to a minimum.
2. DO NOT close circle WILLIAM (W). fittings.
3. DO NOT don protective clothing and protective masks at this time.

(2) On daily instruction periods.

a. All departments should take action to eliminate fire and missile hazards and to reduce the amount of porous material to a minimum BEFORE Fleet Training Group Damage Control Observers arrive and the ship gets underway.

f. Action on Attack.

(1) The attack is imposed verbally by informing the Commanding Officer of an Nuclear underwater burst with its range and bearing. The range is usually around 4000 yards. This information should immediately be passed over the 1MC and paralleled over all the sound powered phone circuits.

(2) When the attack is announced over the 1MC, All Hands should immediately seek protection behind any object that will protect them from penetrating radiation and assume a flexed knee position. They should also hold on to a solidly anchored object so that they will not become missiles when the underwater shock wave hits the ship. Topside personnel should cover exposed skin area to protect themselves from flash burns as fast as possible (air burst only).

(3) The conning officer should endeavor to present a STERN-ON or BOW-ON aspect to the burst until the immediate damaging effects are over. Then alter course away from the burst at maximum available speed until clear of the immediate area. Ref. ATP-1(A) and NWP-32A.

(4) At about +20 seconds, pass the word over the 1MC that the underwater shock wave has passed the ship. This should also be paralleled over all sound powered phone circuits.

(5) As soon as the underwater shock wave has passed the ship, the following action should take place in the shortest possible time:

(a) All personnel resume normal positions.
(b) Sound Chemical Alarm.
(c) Start "prediction of peak intensity plot" in DCC.
(d) Don protective masks (Simulated except for monitoring, detection, sampling, and decon teams).
(e) Designated personnel close circle WILLIAM (W) fittings.

This order should be given by Conn over the 1MC and paralleled over all sound powered phone circuits. The closing of circle WILLIAM (W) fittings is a command decision depending upon the tactical situation. However, it is assumed for the purpose of exercising the Nuclear Warfare Defense Organization to the maximum extent that the tactical situation is such that the ship can withdraw temporarily from action to apply radiological defensive measures.

(f) Primary gross decontamination is accomplished with the water washdown system. The system is ordered activated

after the underwater shock wave has passed the ship allowing a reasonable time for personnel to close circle (W) fittings and evacuate the topside. The criteria is to activate the system before the ship is engulfed in the base surge and heavy fallout.

(g) The bridge monitor will begin to get readings at +1, continuing to about +12. Bridge readings along with those taken in DCC are used to construct prediction and cessation of fallout plots. Monitors at other check points will begin to get readings at about +4 continuing to about +12. These readings are used to determine relatively how much the ship is contaminated.

(h) Evacuate all exposed topside personnel. This order should be given by Conn over the 1MC and paralleled over all sound powered phone circuits. Again, this is a command decision, but it is necessary for evaluation purposes.

(i) Second Survey Teams and Decontamination Squads begin dressing in protective clothing and protective masks.

(j) Decontamination station personnel proceed to their assigned stations.

(k) Investigating teams begin investigation for structural damage below decks. Weather deck areas should also be investigated for damage if feasible. Items of damage are imposed for investigative, reporting and analysis purposes only. Repair parties not involved in nuclear defense survey and decontamination evolutions may be exercised in the repair of structural damage imposed.

(6) +1 - A Fleet Training Group Damage Control Observer will inform the Commanding Officer that the base surge and heavy fallout will engulf the ship in about 3 minutes. This is for information purposes only, but should be passed over the 1MC and paralleled over all sound powered phone circuits. Personnel should continue to close circle WILLIAM (W) fittings. Damage Control Central will start prediction plot.

(7) +2 - The decontamination station to be used should be designated as soon after the burst as possible so personnel can prepare to man the station. This information should be passed over the 1MC and repeated often enough to ensure exposed personnel receive the information about every 15 minutes.

(8) +3 - A Fleet Training Group Damage Control Observer will inform the Commanding Officer that the ship will be engulfed in the base surge and heavy fallout in about one (1) minute. Again this word should be passed over the 1MC and paralleled over all sound powered phone circuits.

(9) +4 - A Fleet Training Group Damage Control Observer will inform the Commanding Officer that the ship has been engulfed in the base surge and heavy fallout. Again this word should be passed over the 1MC and paralleled over all sound powered phone circuits. Fleet Training Group Departmental Observers will begin checking for proper circle WILLIAM (W) Closure.

(10) +6 - Start "cessation of fallout" plot.

(11) The water washdown system is ordered deactivated by the DCA after he has noted that a plateau has been reached on his cessation of fallout plot.

(12) Upon notification that the water washdown system has been secured, the DCA will order the second survey.

(13) Upon cessation of fallout the DCA will inform bridge that the ship is clear of the base surge and heavy fallout (passed over the 1MC).

(a) Residual contamination will be imposed in several areas by the Fleet Training Group Damage Control Observers.

(b) Second Survey reports should begin to arrive in DCC.

(14) The ship has established an MPE (Maximum Permissible Exposure)of 100 Roentgens. Using the MPE established, the DCA will determine the safe stay time for each contaminated area reported to DCC. This safe stay time will be reported to Conn immediately and then passed over the 1MC for the information of all hands. Personnel remanning contaminated stations will be questioned to determine if they know what the safe stay time is for their station. Repair party personnel should know stay times for all contaminated areas within their section of the ship.

(15) It is imperative that clear vital open air defense stations and the safe stay time of contaminated areas be reported to Conn immediately since the ship will be subject to re-attack at about +20. Reports of clear areas received in DCC via the bridge need not be reported again to Conn since Conn should intercept the message as it passes through.

(16) Remanning of exposed topside stations is a command decision. For the purposes of evaluation, Conn will not order any station remanned until a report is received from DCC or intercepted on the bridge enroute to DCC concerning the state of contamination of that station.

(17) The Damage Control Observer in DCC will inform the DCA that the ship is "clear of all contamination ". At this time, the DCA should inform Conn of this fact and recommend that circle (W) fittings be opened and Material Condition ZEBRA be reset. This completes the Nuclear Defense Exercise.

2. NUCLEAR WARFARE (Cont'd)

PERSONNEL COUNTERMEASURES AGAINST NUCLEAR WEAPON BURSTS

	NO WARNING		WARNING	
Burst Type	Topside Exposed Personnel	Below Deck Personnel	Topside Exposed Personnel	Below Deck Personnel
Air	A	B	C	B
Surface	A	B	C	B
Underwater	B	B	B	B

A - Hands-to-Face Evasion.

B - Stand with knees flexed holding on to solid ship structure.

C.- Prone holding on to solid ship structure.

The recommended Hand-to-Face Evasion is: Upon receiving a light stimulus (seeing the flash, or the sky light up), close your eyes and immediately raise your hands to cover your face, dropping to the deck as rapidly as possible. Do not use your hands to brake your fall; use your legs, hips and shoulders.

3. The Use of Chemical Alarm for NBC Warfare Defense.

(1) In compliance with NWIP 50-1A, Chapter 12, Art. 1242, the Chemical Alarm will be used to denote contamination resulting from chemical, biological agents or residual radiation from nuclear bursts.

(2) On hearing the Chemical Alarm, the following action shall be taken:

a. All hands don protective masks. (Until masks are issued to all hands, only those persons assigned to monitoring, detection, sampling and decontamination teams will actually don masks.)

b. Set Material Condition ZEBRA (if not already set) and close circle WILLIAM (W) fittings.

c. Rig and activate water washdown system.

Orders to accomplish these evolutions should be paralled over the 1MC and all sound powered telephone circuits. Any evolution not to be executed due to the tactical situation at hand, such as activating the water washdown system, etc., should be countermanded via the 1MC and sound powered telephone circuits.

(3) The Chemical Alarm will be used in conjunction with NBC events as follows:

a. Nuclear Underwater Burst: The Chemical Alarm shall be sounded after the shock wave has passed the ship and not later than +1. The alarm is used in this case to inform all hands that residual radiation is present or expected and that the countermeasures listed in paragraph (2) above are to be executed immediately.

b. Biological and Chemical Attack: The Chemical Alarm shall be sounded immediately after a Biological or Chemical attack has occured, or is suspected to have occured. The alarm is used in this case to inform all hands that contamination is present or suspected from either Biological or Chemical agents and that the countermeasures listed in paragraph (2) above are to be executed immediately.

H. NUCLEAR WEAPONS INCIDENTS

1. Nuclear weapons incidents will normally be handled by Weapons Department personnel and/or Repair Parties. This information is included here because you may be present when an incident commences and you should know the dangers involved as well as the things which are probably not a danger.

GENERAL.

a. The information contained herein is Unclassified and supplements CONNAVAIRLANTINST 5100.18 of 5 August 1959.

b. A nuclear weapons accident may occur as a result of an aircraft crash, fire, shock or other means, while in storage or transit. Accidents involving nuclear weapons and components can also involve other materials in the vicinity, such as conventional ammunition and aviation fuels. Secondary fires may occur which require prescribed damage control procedures and precautions applicable to the type of fire.

c. The two componehts of a nuclear weapon that constitute the major hazards in the event of an accident are the high explosive and plutonium.

(1) High explosives constitute the major hazard associated with nuclear weapons accidents.

(a) Fire. If a nuclear weapon is enveloped in the flame of a gasoline or JP fire, the high explosive may ignite, burn or detonate. High explosives may also melt at comparatively low temperatures, flow out of the weapon and resolidify. In this state, they are extremely sensitive to shock. Ignition or detonation of the high explosives in a nuclear weapon involved in a fire can normally be prevented if the temperature of the explosives is kept below 300°F., however, ignition or detonation can occur at temperatures under 300°F under certain conditions.

(b) Disposal. Only Explosive Ordnance Disposal (Special Weapons) Team personnel should attempt to clear up, recover or dispose of high explosives and nuclear components.

(c) Nuclear Yield. The possibility of the accidental nuclear explosion of nuclear weapons is remote.

FIRE FIGHTING PROCEDURES.

a. The first consideration at the scene of an accident shall be the rescue of personnel.

b. Clear the area of all non-essential personnel.

c. Remove parked aircraft and other mobile equipment to prevent spreading of fire.

d. Establish fire boundaries.

e. Close (W) fittings throughout the ship as necessary to prevent the spread of contamination.

f. If there is a fire and if the weapon is not burning or engulfed in flames; take immediate action to:

(1) Extinguish the fire in the normal manner.

(2) Cool the weapon with water using high velocity fog from at least two 2½" hoses, keeping the weapon completely enveloped in the spray. If the temperature is kept below 300°F., detonation normally will not occur. If the weapon has a pressurized case, a rupture may be accompanied by an apparent explosion or report.

g. The use of multiple edged bayonet fitting attached to the end of 12' low velocity fog applicator is a rapid means of penetrating the interior of an aircraft bomb bay with water for initial cooling of the weapon. Proper precautions in the use of this bayonet should be exercised to prevent striking the weapon or fuel cells in the bomb bay. Aircraft with bomb bays (where weapons are carried internally) will normally have markings on the fuselage to indicate where the bayonet type applicator is to be inserted.

h. Do not use foam on nuclear weapon where the foam will act to trap heat inside the weapon. Foam is an insulator and may act to retain heat. If water spray is not available, foam may be used as a last resort.

i. If weapon is engulfed in flames or if the high explosive is burning (torching), there is a possibility that the high explosive may detonate depending on type weapon involved and the length of time it has been exposed to fire. In this case, it may be advisable to jettison the weapon if feasible, otherwise cool down the weapon and fight the fire in the most expeditious manner, taking safeguards to ensure that a minimum number of personnel are involved.

j. Avoid smoke and clear downwind areas if the accident occurs topside. If dense smoke or fumes must be encountered for long periods of time in areas below decks, personnel should wear OBA's and protective clothing.

k. After the fire and burning of the weapon has been brought under control:

(1) Commence explosive ordnance disposal of scene by EOD (SW) team.

(2) Commence radiation monitoring of area by monitoring teams.

(3) Commence decontamination procedures by decontamination teams.

(4) Monitor and decontaminate all personnel involved in the accident.

(5) Rope off scene in a semi-permanent manner, if operations permit.

I. INSTRUCTIONS FOR USING MKV GAS MASK

1. The Mark V Gas Mask protects your face, eyes, nose, throat and lungs against ABC Agents. The reason it is so important is that inhaling or swallowing ABC Agents is much more dangerous than getting them on the outside of your body. Without filtration of some kind, a large amount of contamination could be inhaled in a short time.

2. The mask does two things:

(1) It filters the air, removing particles of dust and smoke which may be radioactive or contaminated with BW or CW agents.

(2) It purifies the air of many poisonous gases. The mask does not produce oxygen, and for this reason is of little benefit in a closed compartment where there is a lack of oxygen; in such places you must use an oxygen breathing apparatus (OBA).

3. To fit the Mark V Mask when it is issued, let out the harness straps to their full length. Put on the mask, holding the cap of the head harness against the back of the head. Adjust the center (top) harness strap first; the lower part of the mask should touch the under portion of your chin. Last, adjust the temple straps and check straps. The ND Mark V is designed for a light touch of the mask to the face. The straps should not be taken up to a point where lines are visible on the face when the mask is taken off.

4. To test the mask for air tightness each time you put it on, tilt the head forward and exhale forcibly while shaking the head. Any leak will be noticed as air blowing out between the mask and your face. Place your hands over the canisters so no air can enter, and inhale until the mask collapses; hold your breath for about ten seconds to see if the mask remains collapsed. If the mask does not collapse as it should, either the mask does not fit properly, or the straps are not properly adjusted.

5. To remove the mask, loosen the check straps by placing your forefingers under the tongues of the buckles and pulling forward. Then grip the chin section or canisters of the mask and pull forward and upward. The top strap and temple straps of the harness are not loosened when removing the mask. They should not be changed after the correct initial adjustment.

6. Antidim, which reduces fogging of the lens to permit clearer vision, is included as an accessary with all masks. Rub the antidim cloth on the lens each time the mask is cleaned and after each wearing of the mask. Antidim can also be used on eyeglasses worn inside the mask.

J. COMPARTMENT CHECK OFF LISTS

1. These lists are easily over looked when walking about the ship, but they are important to effective damage control. They are of assistance to personnel setting material conditions, as well as to the responsible divisions which must check to ensure that all required fittings and equipment are in good condition. Remember that you may draw spanner wrenches, dog wrenches etc. from the Hull Shop (02-230-2-Q). Contact the Lighting Shop (03-256-1-Q) to replace battle lantern batteries. Inform R Division (02-200-1-Q) of other discrepancies which you cannot correct yourself. The following rules apply to these lists:

(1) There shall be a compartment check-off list for every compartment or weather deck area where any damage control facility is located. They will be permanently posted in the compartment or area concerned and shall provide an itemized list indicating the location of all classified fittings and other facilities useful for damage control for ready use of personnel responsible for setting material conditions.

(2) The following list is furnished for guidance:

(a) Doors, hatches, scuttles, watertight manholes, watertight and airtight shutters and skylights, air ports, airtight windows, airtight and fumetight doors, oiltight manholes, watertight passing scuttles in doors and bulkheads, ammunition scuttles, and ammunition hoist covers.

(b) Ventilation blowers and closures, fire dampers, and valves of the chilled water system.

(c) Valves of the fuel system.

(d) All riser and cutout valves of the fire-main system, root cutout valves of the flushing system.

(e) Valves of the magazine-sprinkler system.

(f) Manually operated cut-off valves of the compressed air system.

(g) Drainage system valves, including scupper valves and deck drain valves.

(h) Caps for connecting hose for air-testing or flooding.

(i) Fittings and valves for counter-flooding.

(j) Air escapes or air vents with closure devices.

(k) Sounding tube outlets.

(l) All reach rods or other apparatus for remote control of valves.

(m) Root cutout valves of ship's service steam and fresh water lines.

(n) Caps of fixed fog nozzles.

(o) Caps on overboard discharge connection for portable pumps.

(p) Voice tube outlets, closures, and the stations to which tube leads.

(q) Valves in gasoline and alcohol systems.

(3) In addition, there shall also be listed, but no classification or marking is necessary, the following items:

(a) Fireplugs.
(b) Air escapes and vents not provided with closure fittings.
(c) Battle and ship service telephones.
(d) Sound-powered telephones.
(e) Loud-speaker transmitters and receivers.
(f) Relief, check, reducing, and automatic cutout valves in compressed air systems.
(g) Ventilation ducts not fitted with closure devices.
(h) Deck-drain valves with no closure devices.
(i) Check valves in air-conditioning system.
(j) Casualty electric-power outlets and risers.
(k) Multi-purpose outlets.

DUPLICATE OR PARTIAL CHECK-OFF LISTS

1. In the case of compartments having two or more entrances, duplicate check-off lists for each entrance are required. These lists should be clearly labeled "Duplicate". In the case of compartments having alcoves or spaces included within them where facilities are located, it may be desirable to have partial check-off lists posted in these alcoves or spaces, but these partial lists should be clearly labeled "Partial" and the item numbers on these partial lists must correspond with the numbers on these list. Check-off lists should be kept within practicable limits, and it may be necessary to divide weather decks and some decks into sections such as "port side forecastle," and so forth.

K. QUESTIONS AND ANSWERS

1. At various times all hands will be asked questions concerning various damage control subjects. These are all easy things to remember. Most questions which are likely to be asked are contained in the following list along with the correct answer. Review these questions and answers periodically to ensure that you will be prepared to help ENTERPRISE receive a good evaluation.

Questions With Answers on NBC Warfare Defense Used to Determine Knowledge of Personnel

Questions preceded with an * will be used on the ORI.

NUCLEAR WARFARE DEFENSE

1. What are the three major effects of a nuclear air burst?
   Ans: Blast, Thermal radiation, and nuclear radiation.

*2. Why is it so improtant that personnel take cover within one second after a nuclear air burst?
   Ans: Because in the first second one half of the nuclear radiation and 63% of the thermal radiation is experienced.

3. What is the chief cause of personnel casualties from a nuclear air burst?
   Ans: Heat.

4. Would a ship normally become contaminated from a nuclear air burst:
   Ans: No or very little.

5. What type of damage would you expect to your ship from a nuclear air burst?
   Ans: Caved in decks, electrical fires due to electrical cables parting, ruptured bulkheads, fires from exposed burnable items, blast damage, etc.

6. What are the two major effects of a nuclear underwater burst?
   Ans: Underwater shock wave and contamination from the fallout.

7. Why is a nuclear underwater burst potentially more dangerous to naval vessels than an air burst?
   Ans: Underwater shock waves will produce a larger amount of underwater damage. Also, it is more dangerous because of possible contamination from the heavy fallout.

*8. Is it possible for your ship to become contaminated from a nuclear underwater burst? How?
   Ans: Yes. By being engulfed in the base surge and or heavy fallout.

9. What type of damage may be expected from a nuclear underwater burst?
Ans: Holes in skin below the waterline, ruptured fire mains, ruptured water lines, electrical fires due to parted electrical cables, disabled boilers, and a large amount of radiological contamination on the weather surface.

*10. Why do you secure all circle William fittings prior to or immediately after a nuclear burst?
Ans: So as to prevent radioactive particles from entering the ship.

11.. Why do you conduct the initial survey after a nuclear burst?
Ans: To determine if the ship is contaminated and relatively how much.

12. Why do you conduct the second survey?
Ans: To determine location and intensity of residual contamination.

13. Why do the members of the monitoring teams for the second survey and the decontamination squads wear protective clothing and gas masks?
Ans: To prevent them from becoming contaminated with radioactive particles.

14. Why is it important to remove protective clothing properly after monitor and decontamination work?
Ans: The clothing is probably contaminated. The radioactive particles could get on your skin or inside your body.

15. In the event of a probable nuclear attack you would be issued a dosimeter. Why?
Ans: So there would be some way to determine how large a dose of radiation you received.

*16. What does the DT-60/PD dosimeter measure?
Ans: The total amount of radiation received by the person wearing it.

17. What do Geiger Counters and similar radiac instruments measure?
Ans: They measure the intensity of nuclear radiation in roentgens or milli-roentgens per hour.

18. What is the difference between radiation and contamination?
Ans: Contamination consists of particles which emit nuclear radiation. Radiation consists of invisible rays and ionizing particles given off from a radioactive substance.

19. Why is it important that you neither eat, drink or smoke after a nuclear attack?
Ans: To prevent the radioactive particles from entering your body which would cause radiation sickness.

*20. What is the best defensive measure against a large scale contamination of your ship after a nuclear underwater burst?
Ans: First, avoid the base surge and heavy fallout. If this is not possible, activate the water washdown system.

21. Why is it important to start primary gross decontamination as soon after the burst as possible?
Ans: It is easier to remove contamination if the weather surfaces are still wet.

22. In most cases, what simple procedure will rem ove most of the radioactive contamination?
Ans: Washdown the ship with salt water from the fire main.

23. In primary gross decontamination, why do you jettison all loose porous gear?
Ans: Porous material is very difficult to decontaminate.

24. Name several substances found aboard ship that would be very effective in decontamination work?
Ans: Boiler compound, lye, bleach, and soap.

*25. Why are highly contaminated areas isolated by roping off or blocking?
Ans: So as to prevent personnel from passing through the area unknowingly.

*26. In scrubbing down a contaminated area, in what direction should you always scrub?
Ans: Top to bottom; windward to leeward, forward to aft.

*27. What is one of the first symptoms of radiation sickness?
Ans: Nausea (vomiting), a feeling of weakness.

*28. What action do you take as soon as you know that a nuclear weapon has been exploded underwater in the vicinity of your ship?
Ans: Flex your knees and hold on to a solid structural object.

PERSONNEL DOSIMETER (DT-60/PD)

*1. Describe the DT-60/PD dosimeter?
Ans: It consists of a piece of special glass encased in a round black case.

*2. How is the radiation dose determined from the DT-60/PD dosimeter?
Ans: By use of the CP-95/PD radiac-computer-indicator.

*3. What is the maximum dosage the DT-60/PD will record?
Ans: 600 roentgens.

*4. What maintenance is required for the DT-60/PD dosimeter.
Ans: None. It should be given a calibration check when issued.

*5. Why should the DT-60/PD dosimeter be handled carefully?
Ans: It contains a glass element.

*6. How do you decontaminate a DT-60/PD dosimeter?
Ans: Wash with soap and water?

*7. In the event DT-60/PD dosimeters are issued to the crew, what accounting is made?
Ans: The serial number is recorded in the health record of the individual.

*8. How long a period will the DT-60/PD dosimeter be effective for an individual to record doses of radiation?
Ans: For life, or until the dosimeter has been exposed to a total of 600 roentgens.

CHEMICAL WARFARE DEFENSE

*1. What type of war gases are most likely to be used on naval vessels?
Ans: Vesicant (blister) and "G" gases (nerve gases).

*2. Your ship has been exposed to a gas attack. How do you determine what type gas has been used.
Ans: By testing with an M-18 series chemical testing kit.

*3. What property of vesicant or blister gases makes them very likely to be used on naval vessels?
Ans: Persistency. (long lasting).

*4. You have liquid mustard on your skin. What ointment should be used for first aid? Describe the procedure.
Ans: M-5 or protective ointment. Pinch or blot liquid from skin with cloth or absorbent paper. Apply M-5 ointment for 30 seconds; remove excess; apply second coat and let remain. If on clothing, cut contaminated portion. Should be applied within five (5) minutes after contact with agent.

*5. What agent, very common on board ship, is efficient for decontamination of blister gases?
Ans: Water, bleach, lye and RH-195.

*6. For what is RH-195 or Danc primarily used?
Ans: Decontamination.

*7. In what three ways are gases likely to be introduced aboard your ship?
Ans: Spray, bomb, and missile or shell.

8. Why are "G" gases so difficult to detect?
Ans: They are colorless and have very little odor if any at all.

9. What are the first symptoms of nerve gas poisoning?
Ans: Painful eye spasms, pinpointed pupils, dimmed vision, tightness in the chest, headache, nausea, cramps, and paralysis of the respiratory system.

10. What is the antidote for nerve gases?
Ans: Atropine.

11. Which reagent bottle in the C/W detection kit must be remixed every twenty four hours?
Ans: The one with the green top.

12. Which end of the C/W detector tube is inserted in the rubber bulb or impinger?
Ans: The dot end.

13. For C/W detection how far above a pool or liquid agent should the end of the detector tube be held?
Ans: 1/4 inch.

14. How is the rubber bulb in the C/W detection kit checked for leaks?
Ans: Press the sharpened end of a pencil into the bulb and compress the bulb, if the bulb inflates in less than ten seconds, it is defective.

15. What is the name of the solution made from mixing a combination of RH-195 powder and TCE (Tetrachlorethane) liquid?
Ans: DANC a decontaminating agent, No-corrosive.

16. What ingredients and what ratio is used in mixing DANC?
Ans: One part RH-195 powder to four parts TCE liquid.

17. DANC is a chlorine base solution. What type of gas will it neutralize?
Ans: Blister.

18. What type of solution is used to neutralize nerve gas?
Ans: Alkaline, such as boiler compound, soap, lye, etc.

19. When mixing DANC solution what safety precautions should be observed?
Ans: Men on the weather deck, wear impregnated clothing and a protective mask.

20. How does the impregnate solution used on protective clothing protect personnel?
Ans: It is a chlorine base chemical that will neutralize vapors and droplets of blister gas.

21. What procedures should be taken if droplets of a liquid blister agent is noted on impregnated clothing being worn?
Ans: Cut away the cloth and treat the skin with M-5 ointment.

22. What color is the triangular chemical contamination sign?
Ans: Yellow with black lettering (GAS) on the front and the back is white.

BIOLOGICAL WARFARE DEFENSE

*1. What individual piece of equipment is your first line of defense against biological wa rfare agents?
Ans: Protective mask.

*2. Can unpacked food be contaminated by biological warfare agents?
Ans: Yes.

*3. Can food sealed in containers be contaminated with biological warfare agents?
Ans: No.

*4. How would you decontaminate canned goods suspected of biological warfare agents?
Ans: Wash cans in a solution of 1 part bleach to 10 parts water.

*5. What will gnerally be the first indication of a biological warfare attack?
Ans: The sighting of a mist or spray from a passing plane not identified as a chemical warfare attack.

*6. Food is cooking in the galley when the galley becomes contaminated with biological warfare agents. What would you do with the food?
Ans: Dispose of it promptly.

QUESTIONS AND ANSWERS (Cont'd)

*7. What is the first step in gross decontamination of the weather deck areas of a ship?
Ans: Washing down by the use of installed wash down system or fire hose.

*8. What ingredients could be used for decontaminating weather deck areas that were heavily contaminated?
Ans: Caustic soda (lye), bleach, soap, clorine or steam cleaning.

*9. Name five decontaminating agents that are available on most ships?
Ans: Caustic soda (lye) bleach, soap, steam, boiler compound and disinfectant.

10. In additon to use against humans biological warfare may be used against?
Ans: Plants and animals.

11. Which department is responsible for the identification of biological warfare agents?
Ans: Medical.

12. What procedures should be followed when decontaminating the weather decks of a ship with fire hoses?
Ans: Wash from high to low and from windward to leeward.

QUESTIONS AND ANSWERS ON RADIAC EQUIPMENT

AN/PDR-27 (Low range radiac survey instrucment)

1. What is the highest intensity that can be read on the AN/PDR-27?
Ans: 500 mr/hr.

2. How many milliroentgens are there in a roentgen?
Ans: 1000.

3. What type of radiation will the AN/PDR-27 detect?
Ans: Gamma on the two high scales and gamma & beta on two low scales with the shield of the probe removed.

4. What is the purpose of the push-button on the AN/PDR-27?
Ans: To illuminate the meter.

5. What is the advantage of wearing the headphones when using the AN/PDR-27?
Ans: Very slight variations in intensity can be detected more readily.

AN/PDR-18 (High range radiac survey instrument)

1. What is the highest intensity that can be read on the AN/PDR-18?
   Ans: 500 r/hr.

2. What type of radiation will the AN/PDR-18 measure?
   Ans: Gamma

3. What scales are provided on the AN/PDR-18 meter?
   Ans: .5 r/hr, 5 r/hr, 50 r/hr, 500 r/hr.

4. When starting a survey, what range should the selector switch be turned to?
   Ans: 500 r/hr.

5. How do you check the "A" and "B" battery voltages?
   Ans: Turn selector switch to the "A" and "B" positions respectively. The needle on the meter should move on or to the right of the respective "A" and "B" position on the meter.

6. How should the AN/PDR-18 be carried when conducting a survey?
   Ans: From the shoulder harness.

AN/PDR-43 (High range radiac survey instrument)

1. What scales are provided on the AN/PDR-43?
   Ans: 5 r/hr, 50 r/hr, 500 r/hr.

2. How do you check the condition of the batteries?
   Ans: Turn the selector switch to the "BATT" position; the meter should not read below the "BATT" mark.

3. What does the AN/PDR-43 measure and detect?
   Ans: It measures Gamma and detects Beta.

4. What are the three positions of the function selector disc located on the bottom of the radiac?
   Ans: Check, Beta, and Gamma.

5. Why must the function selector disc be in the Gamma position before the AN/PDR-43 case is opened for any maintenance, inspection or repairs?
   Ans: If the function selector disc is on Check when the case is opened, the Beta source will be exposed. The Beta source is powerful enough the produce tissue injuries with prolonged exposure.

6. What calibration adjustments should be made by the operator of the AN/PDR-43?
   Ans: None. The operator is not permitted to make calibration adjustments.

7. What are the three controls that the operator of the AN/PDR-43 is allowed to handle?
   Ans: Selector switch, light switch, and the function selector disc.

8. What is the primary power source of the AN/PDR-43?
   Ans: Two 1½ volt dry cells.

CP-95/PD (Radiac computer indicator for DT-60/PD)

1. What is the CP-95/PD used for?
   Ans: To measure the total amount of Gamma radiation that a DT-60/PD has been exposed to.

2. In what part of the personnel decontamination station should the CP-95/PD be located?
   Ans: In the clean area of the exit side.

3. What is done with the DT-60/PD readings obtained with the CP-95/PD?
   Ans: They are logged. This information is later made a permanent part of the persons health record who wore the DT-60/PD.

4. What is the maximum amount of Gamma dosage that the CP-95/PD will measure?
   Ans: 600 R.

5. What is the source of power for the CP-95/PD?
   Ans: 110 volts A.C.

6. Where are the access tools for the DT-60/PD located?
   Ans: In the lid or cover of the CP-95/PD.

7. Explain the operating procedures for the CP-95/PD.
   Ans: Follow operating instruction posted on the CP-95/PD.

NOTES